

**AMENDMENTS TO THE CLAIMS**

This listing of claims will replace all prior versions and listing of claims in the application.

**Listing of Claims**

1-5 (Cancelled)

6. (Currently Amended) A network relaying apparatus connected to a plurality of networks and outputting packets input from said networks, to the next transfer ~~destination~~ route based on address information, comprising:

a plurality of network interfaces connected to at least one of said networks and transmitting and receiving packets input to and from said at least one network, each packet being formed of a header and data;

a plurality of routing processors connected to at least one of said plurality of network interfaces and routing input packets input from said network interface;

a routing manager for managing internal components of the apparatus; and

a connector for connecting said routing manager and each of a plurality of said routing processors;

wherein each of said plurality of routing processors comprises:

a packet buffer for storing overall input packets;

a header memory accessible asynchronously with said packet buffer and adapted for storing header information including a header of input packet and an internal header;

a transfer engine which stores an input packet input from said network interface to said packet buffer and stores the header of the input packet and said internal header as header information to said header memory, and generates an output packet based on the input packet stored in said packet buffer and the header information stored in said header memory, and outputs the output packet to said connector or said ~~header memory~~network interface; and

a search engine which searches ~~destination information~~next transfer route information based on the header information stored in said header memory to extract ~~destination~~next transfer route information and writes the extracted ~~destination~~next transfer route information into said header memory as part of said internal header; and

when said internal header stored in said header memory includes a plurality of ~~destination information~~next transfer route information for multicasting, said transfer engine outputs said output packet to any or both of said connector and said at least one network interface in accordance with each of said plurality of ~~destination~~next transfer route information.

7. (Currently Amended) A network relaying apparatus according to claim 6, wherein each of said routing processors further comprises a plurality of output buffers corresponding to said at least one network interface and the other routing processors, respectively, and

said transfer engine stores said output packet into at least one of output buffers corresponding to ~~destinations~~ a plurality of next transfer routes indicated by said plurality of ~~destination~~ next transfer route information among said plurality of output buffers.

8. (Currently Amended) A network relaying apparatus according to claim 6, wherein each of said routing processors further comprises a route table memory for storing ~~address~~ route information, and

in response to inputting of a packet from said network interface, said search engine reads destination address from the header stored in said header memory out, searches said ~~address~~ route information stored in said route table memory using said destination ~~information~~ address, and extracts said plurality of ~~destination~~ next transfer route information and writes the extracted ~~destination~~ next transfer route information into said header memory as part of said internal header.

9. (Currently Amended) A network relaying apparatus according to claim 6, wherein said connector transfers said output packet to said at least one of said plurality of routing processors based on said plurality of ~~destination~~ next transfer route information contained in the internal header of said network output packet.

10. (Previously Presented) A network relaying apparatus according to claim 6, wherein said connector is a crossbar switch.

11. (Currently Amended) A network relaying apparatus according to claim 6, wherein each of said routing processors further comprises a filter information memory which stores filter information, and

said search engine reads out the header information stored in said header memory-~~out~~, searches said filter information memory using said header information to extract filter information, and writes the extracted filter information into said header memory as part of said internal header.

12. (Currently Amended) A network relaying apparatus according to claim 6, wherein each of said routing processors further comprises a QoS information memory which stores QoS information, and

said search engine reads out the header information stored in said header memory-~~out~~, searches said QoS information memory using said header information to extract QoS information, and writes the extracted QoS information into said header memory as part of said internal header.

13. (Previously Presented) A network relaying apparatus according to claim 6, wherein said connector further comprises a plurality of queues for storing packets different in priority, and stores output packets into any of said plurality of queues based on said QoS information

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included in the internal header of said output packets and outputs said output packets in an order predetermined for each queue.